

The Structure of Finnish Relative Clause*

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This article has two aims. First, it argues against (Manninen, 2003b) who claims that Finnish restrictive relative clauses are derived by Kaynean style head raising. We argue, based on evidence from binding, case assignment, polarity, quantifier scope, anaphors and extraposition that head raising is not a possible strategy for deriving Finnish restrictive relative clauses. We then argue that Finnish restrictive relative clauses are right-adjoined to the projectional spine of the hosting DP and that they are derived head-externally. A detailed grammatical mechanism for deriving relative clauses in Finnish is proposed in the minimalist framework that takes into account recent observations concerning snowball wh-movement and the structure of Finnish CP. We will also make several comments towards clarifying the grammatical role of the scope-discourse active left periphery and propose an extension to the recent feature inheritance model by Chomsky (2008).

Keywords: *Finnish, relative clause, raising analysis, edge, feature inheritance*

1 Introduction

This article examines Finnish restrictive relative clauses. An example of a restrictive relative clause in Finnish is provided in (1).

- (1) *Tuo on kirja, [jonka kaikki ovat lukeneet]*
that is book which everyone have read
'That is the book which everyone has read.'

Generativists have debated the correct analysis of relative clauses for decades. Smith (1964) and Chomsky (1965) were the first to address the structure of relativization from the generative perspective. Chomsky proposed a head external analysis, further developed and defended by Jackendoff (1977), Chomsky & Lasnik (1977) and Borsley (1997), among others. This analysis was and is challenged by the raising analysis, which was proposed by Vergnaud (1974) and Schachter (1973) and has been developed by Kayne (1994) and

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Bianchi (1999). Our entry-point here is the article by Manninen (2003b), who proposes a raising analysis for Finnish relativization.¹ Here we take issue with Manninen and argue that the raising derivation is not an option in Finnish.²

In the latter portion of this article we present our own analysis: Finnish restrictive relative clauses are right-adjoined and head external. A detailed grammatical model of head external relativization is presented. The model takes into account several new observations concerning Finnish relativization, some published but many still unpublished. We will take several steps towards clarifying the role that the left peripheral position, or the edge position, plays in sentences and subsentential domains, and propose an analysis in terms of the *edge feature* by (Chomsky, 2008).

To see what is at stake, consider example (2).

- (2) I know the man who(m) you met ___ yesterday
 ‘I know the x such that x is a man and you met x yesterday.’

The relative clause begins with a relative pronoun *who*, which is associated with a gap (marked as ___). The phonologically empty position is the “relativization site”. The material inside the DP that the relative clause modifies, the noun phrase *man*, constitutes the *head* of the relative clause. The head external analysis claims that the head has never been inside the relative clause, thus it is “external” to it. According to one influential head external analysis,³ the relative pronoun is originally merged to the relativization site and is subsequently moved to a left peripheral \bar{A} -position of the relative clause. After this, the relative clause is combined with the relative clause head by a predicate composition rule (Chomsky, 1977, 1982, Rizzi, 1990). This analysis is illustrated in (3). The exact target of merge is debatable and will be addressed in the second portion of this article.

- (3) I know [_{DP} the man [_{CP} *who(m)* you met ___ yesterday]]
 ‘I know the x such that x is a man and you met x yesterday.’

This analysis is “head external” because the relative clause head is never a syntactic part of the relative clause. The raising analysis, in contrast, holds that the relation between the noun head (and other nominal elements) and the relativization site come about by raising, not by predicate composition (Schachter, 1973, Vergnaud, 1974, Kayne, 1994, Bianchi,

¹ Although we will ultimately reject Manninen’s analysis, her paper stands as an important seminal contribution to the generative analysis of Finnish relativization.

² A third possible position is a theory which allows both structures to be derived. Aoun & Li (2003) argue that both derivations exist in English and in Lebanese Arabic (LA) (see also Hulsey & Sauerland, 2006). Áfarli (1994) makes the same claim for Norwegian. We will leave this theory for another occasion and concentrate on the Finnish facts.

³ There are several versions of the head external analysis. One common head external analysis is the matching analysis (e.g. Lees, 1960, Chomsky, 1965, Sauerland, 1998, 2003, Hulsey & Sauerland, 2006). Another version is proposed by Quine (1960), Partee (1975) and Chomsky (1977), the basics of which we will follow here.

1999, 2000, Bhatt, 2002, de Vries, 2002). According to this analysis, the relative clause head *man* originates at the relativization site together with the relative pronoun *who(m)*, which constitutes a determiner. Both elements are subsequently raised to a higher position, where they take part in the construction of the DP. Under the analysis of Kayne (1994), the higher position is Spec,CP; a Kaynean analysis for (2) is provided in (4). The relative clause head moves past the relative pronoun and the relative clause is formed by synthesizing D + CP.⁴

(4) I know [_{DP} the [_{CP} [*man*_{*i*} *who(m)* ____{*i*}]_{*j*} you met ____{*j*} yesterday]]

Which one of these analyses fits Finnish relativization? The raising analysis holds that the relative clause head was once inside the relative clause, from where it raised to construct the hosting DP. Under the head external analysis, the head was never part of the relative clause. To argue for or against either of these analyses, we must seek evidence of the first-Merge position of the relative clause head, and, specifically, whether it can be located inside the relative clause. This issue is examined in section 2. On the basis of the present evidence, we will reject the raising analysis for Finnish. An alternative, head external analysis is provided in section 3.

2 Evidence for the head external analysis

2.1 Where is the head?

Finnish has three main types of relative pronouns: pronoun *joka* ‘which/who/that’, which refers to individuals; pronoun *mikä* ‘what’, which has an abstract referent; and a more rarely used pronoun *kuka* ‘who’, which refers to people. More information on the distribution of these relative pronouns can be found from Hakulinen et al. (2004, §735-736). These relative pronouns share the basic syntactic properties that are relevant for the discussion in this paper. We will therefore concentrate here on the most common one, the pronoun *joka*.⁵

⁴ What comes to *that*-relatives, Kayne assumes that the raised noun phrase is a NP, not a DP. A compelling criticism of this claim was presented by Borsley (1997), and Bianchi (2000) drops the assumption that the moved constituent is a NP. According to Bianchi (2000), it is a DP with an empty determiner. We will discuss the DP-hypothesis briefly in section 2.7.

⁵ We use the following abbreviations in this article: 1SG = first person singular; 1PL; first person plural; ACC = accusative case; GEN = genitive case; INF = infinitive; INE = inessive case; NOM = nominative case; PL = plural; PAR = partitive case; PASS = passive; PRTCPL = participial adjective; PX/3SG = possessive suffix, third person singular form (the third person plural form is identical to the third person singular); Q = yes-no-question particle; SG = singular; TUA = a non-finite verb form belonging to the temporal construction. This form means roughly ‘after doing something’. The person and number inflection on finite verbs is omitted in most example sentences.

- (5) *Pekka osti kirjan, [jonka kaikki ovat lukeeet].*
 Pekka.NOM bought book.ACC which.ACC everyone.NOM have read
 ‘Pekka bought a book which everyone has read.’

The raising analysis differs from the head external analysis with respect to the first-Merge position of the relative clause head (in the example above, the NP *kirja*). If Manninen (2003b) is right in that Finnish restrictive relative clauses are derived by raising, we ought to find evidence of the presence of the relative clause head inside the relative clause.⁶ Our argumentation takes the following form. In the raising analysis, the relative clause head undergoes \bar{A} -movement from its first-Merge position at the relativization site to the edge of the relative clause. In Finnish, \bar{A} -moved phrases maintain most of their grammatical properties which they acquire in the first-Merge position, among them case and polarity properties. We will demonstrate that the relative clause head does not hold those properties. The lack of such “reconstruction” effects suggests that the raising analysis is not on the right track for Finnish.

This section is organized as follows. We will first investigate reconstruction effects: the next section 2.2 considers case assignment on the relative clause head and case concord in different constructions; section 2.3 addresses polarity phenomena; section 2.4 considers anaphors and binding; and section 2.5 reconstruction of quantifier scope. Idioms provide further evidence of the first-Merge position of the relative clause head, and they are considered in section 2.6. Finally, section 2.7 examines the extraposition of relative clauses in both theories.

2.2 Case concord

2.2.1 Background

We begin with a well-known criticism of the raising analysis, and then extend our argument with the help of new evidence coming from quantificational case construction, long distance case assignment and snowball relativization.

Finnish noun phrases exhibit virtually complete case concord. Almost every item inside a noun phrase up until the noun head is case-marked and shows a morphological case feature (6).

- (6) *Pekka söi sen pilaantuneen leivän.*
 Pekka ate the/that.ACC stale.ACC bread.ACC
 ‘Pekka ate that stale bread.’

The raising analysis predicts that the case feature of the relative pronoun and the hosting noun phrase should agree via concord. Under Kayne’s analysis, for instance, the

⁶ There are two types of relative clauses, restrictive relative clauses and appositive relative clauses. Manninen (2003b) shows how restrictive relative clauses and appositive relative clauses can be separated in Finnish. We will use her diagnostics in separating the two. Note that according to Finnish punctuation conventions, both restrictive and appositive relative clauses are preceded with a comma.

relative pronoun and the noun head start off inside the same constituent. This predicts that they should share their case feature. In example (7), for instance, both the relative pronoun *who* = D^0 and the noun head *man* = N^0 are merged to the relativization site, where they should agree in case (cf. (6)).

- (7) I know the [_{CP} you met [who man] yesterday]
 Agreement in case: (who, man)

However, case concord facts support the head external hypothesis (Borsley, 1997, Alexiadou et al., 2000, Bianchi, 2002). The case feature of the noun head is determined by its position inside the *matrix clause*, while the case feature of the relative pronoun is determined by its position inside the *relative clause*. In example (8), the relative pronoun is marked for the nominative while the noun head is marked for the accusative case.

- (8) *Minä tunnen miehen, joka tapasi sinut.*
 I know man.ACC who.NOM met you
 ‘I know the man who met you.’

Bianchi (1999, 94) and Manninen (2003b) explain these facts away by making three assumptions. First, they propose that syntactic, abstract case is a property of D, and that the rest of the nominal elements get case via case concord. Second, they assume that case concord takes place at Spell-Out, after \bar{A} -movement. Third, they assume that the post-syntactic case concord mechanism is local. The most local element bearing a syntactic case feature will assign its case (via concord) to one or several case assignees before the construction is shipped off to the phonological form. These three assumptions derive the facts in the following way. Consider (9) from Manninen (2003b, 681–682). Example (9a) shows the original example, while (9b) shows its derivation under the raising analysis.

- (9) a. *tämä vanha poro jonka Sirkku näki*
 this.NOM old.NOM reindeer.NOM which.ACC Sirkku saw
 ‘this old reindeer which Sirkku saw’
 b. [_{DP} *tämä* [_{CP} [_{DP} *vanha poro_i jonka* ---_i]_j C *Sirkku näki* ---_j]
 this(D₁) old reindeer which(D₂) Sirkku saw

The sentence is derived as follows. First, *vanha poro* ‘old reindeer’ is raised to the specifier of DP headed by $D_2 = \textit{jonka}$ ‘which’. Then the whole DP is raised to Spec,CP and complemented with $D_1 = \textit{tämä}$ ‘this’. The nominal material *vanha poro* ‘old reindeer’ gets case from the local D_1 , while the relative pronoun lives in D_2 and does not receive new case. Thus, we provide that the nominal material will agree with the matrix case (D_1), while the relative pronoun maintains the case it obtains at the relativization site. Notice that under these assumptions, some case forms are determined after \bar{A} -movement, while others are determined before \bar{A} -movement. Specifically, nominal elements below D are provided case forms after \bar{A} -movement, while D receives its case before \bar{A} -movement. We believe, however, that there are strong reasons to doubt that this analysis is the correct one.

2.2.2 *A quantifier construction*

In Finnish (as well as in many other languages) there are situations where the case of the noun head is not determined by D, but by a quantificational numeral that occurs between D and N (Brattico, 2008, Brattico & Leinonen, 2009, Brattico, 2010, 2011a). The basic paradigm is shown in (10).

- (10) a. *Odotin sen puoli minuuttia.*
waited.1SG that.ACC half minute.PAR
'I waited that half a minute.'
- b. *Ostin ne kolme punaista sukkaa.*
bought.1SG those.ACC three red.PAR sock.PAR
'I bought those three socks.'

The numerals *puoli* in (10a) and *kolme* in (b) assign the partitive case (PAR) to the noun head and other elements between the numeral and the head. The elements above the numeral, such as D and certain high adjectives, are assigned external case (ACC). Since the numeral functions as a syntactic case assigner, the raising analysis predicts that the Num-NP complex should *not* undergo case alteration when it is moved to the complement of an external D. This prediction is not borne out. Example (11a) illustrates case assignment on the noun phrase *kolme punaista sukkaa* 'three red socks' when it occurs in a direct object position. Example (11b) shows that the case features of this NP change to inessive when it is raised to Spec,CP, where the higher determiner is assigned the inessive case (inessive means roughly 'in'). Example (c) shows that the partitive case is not maintained in the complement of the numeral.

- (11) a. *Ostin ne kolme punaista sukkaa.*
bought.1SG those.ACC three red.PAR sock.PAR
'I bought those three red socks.'
- b. *Havaitsin reiän niissä kolmessa punaisessa sukassa, jotka ostin ____.*
noticed.1SG hole.ACC those.INE three.INE red.INE sock.INE which.ACC
bought.1SG
'I noticed a hole in those three socks that I bought.'
- c. **Havaitsin reiän niissä kolmessa punaista sukkaa, jotka ostin ____.*
noticed.1SG hole.ACC those.INE three.INE red.PAR sock.PAR which.ACC
bought.1SG

Thus, we assumed that syntactic case is assigned in the first-Merge position, and because the Num-head is a syntactic case-assigner, it should maintain its case in \bar{A} -movement. However, as examples (11b-c) show, the numeral and the elements below it receive case on the basis of the matrix clause. The head external analysis accounts for this phenomenon

since, according to this hypothesis, the relative clause head *kolme punaista sukkaa* ‘three red socks’ has never been at the relativization site. Its case properties therefore reflect its position in the matrix clause.

2.2.3 Long-distance case

Let us consider another context where an approach based on case concord fails to predict the case distribution within a DP. In Finnish, the form of the object case is regulated by the presence of ϕ -agreement on a finite verb (Vainikka & Brattico, in press). For example, in the passive clause (12a), the verb does not inflect in ϕ -features and the object argument exhibits (what looks like) the nominative case. In contrast, when the finite verb inflects in ϕ -features of the subject, as in (b), the object argument exhibits the accusative case.

- (12) a. *Me syötiin kakku.*
 we.NOM ate.PASS cake.NOM
 ‘We ate a/the cake.’
 b. *Me söimme kakun.*
 we.NOM ate.1PL cake.ACC
 ‘We ate a/the cake.’

Furthermore, the presence of ϕ -inflection on the finite verb has an effect to the case of the object argument of a DP-internal non-finite clause, as illustrated in examples (13a-b) below (Brattico, 2012b). Example (a) shows that when the matrix verb does not inflect in ϕ -features of the subject, both the direct object and the object of the non-finite verb inflect in the nominative case. In contrast, when the matrix verb inflects in ϕ -features of the subject, as in (b), the accusative case alternates with the nominative case. Thus, Finnish exhibits long distance case assignment in addition to the more traditional local case assignment.

- (13) a. *Me tehtiin [DP₁ se päätös ostaa [DP₂ se auto/*
 we made.PASS the.NOM decision.NOM to.buy the.NOM car.NOM
**sen auton]].*
 the.ACC car.ACC
 ‘We made the decision to buy the car.’
 b. *Me teimme [DP₁ sen päätöksen ostaa [DP₂ se auto/*
 we made.1PL the.ACC decision.ACC to.buy the.NOM car.NOM
sen auton]].
 the.ACC car.ACC
 ‘We made the decision to buy the car.’

Example (13b) above further demonstrates that the object of the non-finite verb (DP₂) can inflect in *different* case than the D₁, and, therefore, DP₂ does not agree in case with D₁. This means that D₂ does not receive case via case concord, but instead, it is case-marked in syntax. Let us now turn to constructions (14a-b), where the noun phrase

containing the non-finite clause is relativized. Example (14a) shows that when the matrix verb inflects in ϕ -features, the case of the non-finite clause object (DP₂) alternates between accusative and nominative. Conversely, in the absence of ϕ -agreement in (14b), both the object argument and the non-finite clause object (DP₂) inflect in the nominative case. The object argument of the non-finite clause is thus case-marked within the matrix clause.

- (14) a. *Pekka hyväksyi* [_{DP₃} *päätöksen* [_{ostaa} [_{DP₂} *auto/ auton*]],
 Pekka approved.3SG decision.ACC to.buy car.NOM car.ACC
joka me tehtiin ____].
 which.NOM we made.PASS
 ‘Pekka approved the decision to buy the car, which we made.’
- b. *Me hyväksyttiin* [_{DP₃} *päätös* [_{ostaa} [_{DP₂} *auto/ *auton*]],
 we approved.PASS decision.NOM to.buy car.NOM car.ACC
jonka Pekka teki ____].
 which.ACC Pekka made.3SG
 ‘We approved the decision to buy the car, which Pekka made.’

Assuming that case-marking of D takes place in syntax, the raising analysis predicts that the non-finite clause object is case-marked before \bar{A} -movement to the edge of the CP. The raising analysis therefore fails to account for the morphological case of the non-finite clause object in examples (14a-b).

2.2.4 Snowball wh-movement

Finnish relative clause constructions display a significant amount of pied-piping, to the extent that the phenomenon can be characterized in terms of “snowball” wh-movement (Huhmarniemi, 2012, 62–63). In snowball wh-movement, a wh-element first moves to the edge of a constituent, say XP, and the whole XP moves to the edge of a larger constituent, and so forth, until the final scope position is reached. For example, certain adposition phrases (PPs) contain an edge position, to which a wh-phrase moves before the whole PP is pied-piped to the Spec,CP, as illustrated in examples (15a-b) (Manninen, 2003a). The two movement steps are marked in example (b) with indices 1 and 2.

- (15) a. *Pekka käveli* [_{PP} *kobti puistoa*].
 Pekka walked towards park.PAR
 ‘Pekka walked towards a/the park.’
- b. [_{PP} *Mitä*₁ *kobti* ____₁]₂ *Pekka käveli* ____₂?
 which.PAR towards Pekka walked
 ‘What did Pekka walk towards?’

Finnish follows the edge generalization by Heck (2008), which requires that the wh-phrase occurs at the edge of its hosting phrase (Huhmarniemi, 2012). Consider now sentences (16a-b) (from Huhmarniemi, 2012, 63). Example (a) presents the canonical word order of a sentence that contains an adverbial clause that hosts the PP of the example

above. When this sentence is transformed to the wh-question (b), the wh-phrase undergoes three movement steps. First, the wh-phrase moves to the edge of the PP, then to the edge of the adverbial clause, and finally, to the edge of the finite clause (Spec,CP).

- (16) a. *Pekka näki Merjan [kävellessään [kohti puistoa]].*
 Pekka.NOM saw Merja.ACC walk.INF towards park.PAR
 ‘Pekka saw Merja when he was walking towards a/the park.’
- b. *[[Mitä₁ kohti ___₁]₂ kävellessään ___₂]₃ Pekka näki*
 what.PAR towards walk.INF Pekka.NOM saw
 Merjan ___₃?
 Merja.ACC
 ‘What was Pekka walking towards when he saw Merja?’

Relativization is subject to the same mechanism. For example, the derivation of expression (17) in a head external analysis starts off from (17a) and requires two movement steps: movement of the DP to the edge of the adverbial, as in (b), and movement of the adverbial clause to Spec,CP, as in (c). Finally, the relative clause is attached to the DP in (d).

- (17) *se kirja, jota lukemalla nukahdin joka ilta*
 the/that book which.PAR by.reading fell.asleep.1SG every night
 ‘the book by reading which I fell asleep every night’
- a. *nukahdin joka ilta [lukemalla jota]*
 fell.asleep.1SG every night by.reading which.PAR
- b. *nukahdin joka ilta [jota₁ lukemalla ___₁]*
 fell.asleep.1SG every night which.PAR by.reading
- c. *[jota lukemalla ___]₂ nukahdin joka ilta ___₂*
 which.PAR by.reading fell.asleep.1SG every night
- d. *se kirja [jota lukemalla ___] nukahdin joka ilta ___*
 the/that book which.PAR by.reading fell.asleep.1SG every night

When sentence (17) is modelled in terms of the raising analysis, the derivation starts off from (18a) and requires an additional movement step of the relative clause head to the edge of the relative pronoun. This movement is marked with index 3 in example (b).

- (18) a. *D [CP nukahdin joka ilta [lukemalla [jota kirja]]]*
 fell.asleep.1SG every night by.reading which.PAR book.PAR
- b. *se(D) [[kirja₃ jota ___₃]₁ lukemalla ___₁]₂ nukahdin joka*
 the/that book which.PAR by.reading fell.asleep.1SG every
ilta ___₂
 night
 ‘the book by reading which I fell asleep every night’

What happens next under Kayne’s raising analysis is that the external D assigns case to the head *kirja*. However, snowball relativization implies that this operation must penetrate an arbitrary number of phrase boundaries: DP and AdvP boundaries in (18b), but others as well if all possible snowball constructions are taken into account (i.e., PPs, several types of adverbial clauses) (Huhmarniemi, 2012, 223–226). A head must be able to assign a case feature into the specifier’s specifier, indefinitely deep. But we know of no other constructions in which D assigns case so deep into the left branch of its complement. For example, in (19a–b), the expressions in bold satisfy the hypothetical case valuation configuration, but this case is never assigned by D. On the contrary, the specifier of the specifier of the complement of some head H is immune to case assignment by H.

- (19) a. *tätä* [*kauniin* *punaista*] *autoa*
 this.PAR beautiful.GEN red.PAR car.PAR
 ‘this beautifully red car’
- b. *tätä* *Pekan* *autoa*
 this.PAR Pekka.GEN car.PAR
 ‘This car of Pekka’
- c. *tätä* [[*tutkimuksen* *tehneen*] *professorin*] *artikkelia*
 this.PAR research.ACC done.PRTCPL.GEN professor.GEN article.PAR
 ‘this article done by a professor who performed the research’

This problem is avoided in the model by Bianchi (1999, 2000), where the head of the relative clause moves outside of the containing DP to the specifier of a higher head in C-domain, as illustrated in (20) from Bianchi (2000, 130):

- (20) [_{DP} the [_{CP} [_{NP} picture] [_C⁰ [_{XP} [_{DP} which *t*_{NP}] _i [_X⁰ [_{IP} Bill liked *t*_i]]]]]]]

However, this movement violates island conditions in several contexts (see e.g. Bhatt, 2002, 81). For example, the derivation of the Finnish example (17) would require extraction from an adverbial clause, which is a well-known island. These problems will be discussed in connection with extraposition, in section 2.7.

This section has addressed three instances of case assignment and case concord on the relative clause head: case assignment by quantifying expressions, long-distance case and case assignment to pied-piped phrases. The data from these constructions suggest that the distribution of case within Finnish noun phrases cannot be accounted for by relying solely on case concord. The case concord is, however, the principal mechanism of case distribution in the raising analysis, which leads us to conclusion that a head external analysis better accounts for the Finnish data.

2.3 Polarity

2.3.1 Partitive case under negation

What holds true of case assignment holds true of the computation of polarity: the polarity properties of the relative pronoun are determined by elements inside the relative clause, while the polarity properties of the relative clause head are determined by elements inside the matrix clause. We make use of the fact that in Finnish, the sentential negation and other negative polarity items assign the partitive case to direct objects (Heinämäki, 1984, Leino, 1991, Kiparsky, 1998, Kaiser, 2002, Brattico, 2012b, 2011a). The accusative case is impossible under the scope of negative polarity items. This is shown in (21). The verb *voittaa* ‘to win’ requires its direct object in the accusative, while the partitive is ungrammatical (a). With the negation, the facts are reversed (b).

- (21) a. *Pekka voitti *kilpailua/ kilpailun.*
 Pekka won competition.PAR competition.ACC
 ‘Pekka won the competition.’
- b. *Pekka ei voittanut kilpailua/ *kilpailun.*
 Pekka not won competition.PAR competition.ACC
 ‘Pekka didn’t win the competition.’

Examples (22a–c) below demonstrate that the polarity properties of the relative pronoun are determined by elements inside the relative clause, while the relative clause head is sensitive to the polarity elements inside the matrix clause.

- (22) a. *Pekka voitti jonkun miehen, jota en tunne ____.*
 Pekka won some.ACC man.ACC who.PAR not.1SG know
 ‘Pekka won some man who(m) I don’t know.’
- b. **Pekka voitti jonkun miestä, jota en tunne ____.*
 Pekka won some.ACC man.PAR who.PAR not.1SG know
- c. **Pekka voitti jonkun miehen, jonka en tunne ____.*
 Pekka won some.ACC man.ACC who.ACC not.1SG know

The examples above can be accounted for in the raising analysis assuming Bianchi’s model of case, where the matrix D takes the partitive case and the elements within the NP receive morphological case from D by case concord. Nevertheless, in section 2.2.3 (examples (13)-(14)) we argued that case concord fails to capture correctly the case distribution within the relative clause head. The same argumentation applies for the partitive case. Consider examples (23a-b) below. In affirmative sentence (a), the case of the non-finite clause object can be either nominative, accusative or partitive. However, the presence of sentential negation in (b) disables the accusative case.

- (23) a. *Me teimme suunnitelman ostaa talo/ talon/ ?taloa.*
 we made.1PL plan.ACC to.buy house.NOM house.ACC house.PAR
 ‘We made a plan to buy a house.’
- b. *Me emme tehneet suunnitelmaa ostaa talo/ *talon/ taloa.*
 we not.1PL made plan.PAR to.buy house.NOM house.ACC house.PAR
 ‘We didn’t make a plan to buy a house.’

Example (24) shows that partitive under negation also applies to the DP which is contained within the relative clause head. Had this DP acquired case on the basis of its syntactic position within the relative clause, as assumed under the raising analysis, we would predict that accusative case is grammatical. However, the accusative case is ungrammatical in (24).

- (24) *Pekka ei hyväksynyt [DP₁ suunnitelmaa [ostaa [DP₂ talo/ *talon/ taloa]], jonka me teimme ____].*
 Pekka not.3SG approved plan.PAR to.buy house.NOM house.ACC
 house.PAR which.ACC we made.1PL
 ‘Pekka didn’t approve the plan to buy a house which we made.’

The evidence from the first polarity phenomenon, partitive case under negation, therefore suggests that the relative clause head acquires its polarity properties on the basis of its position within the matrix clause rather than the relativization site.

2.3.2 The polarity particle *-kin/ -kAAn*

Another polarity item in Finnish is the particle *-kin*, ‘also, too’, which cannot occur under the scope of negation, as illustrated in (25a-b). The *-kin*-particle has a negative counterpart form *-kAAn*, which is used instead, as illustrated in (25c-d).

- (25) a. *Merja tarjosi työpaikkaa-kin Pekalle.*
 Merja offered job.PAR-*kin* Pekka.to
 ‘Merja offered also a job to Pekka.’
- b. **Merja ei tarjonnut työpaikkaa-kin Pekalle.*
 Merja not offered job.PAR-*kin* Pekka.to
- c. *Merja ei tarjonnut työpaikkaa-kaan Pekalle.*
 Merja not offered job.PAR-*kAAn* Pekka.to
 ‘Merja didn’t offer Pekka a job either.’
- d. **Merja tarjosi työpaikkaa-kaan Pekalle.*
 Merja offered job.PAR-*kAAn* Pekka.to

When the *-kin*-particle appears on the relative clause head, as in the examples below, we observe that the polarity of the matrix clause determines the form of the particle on the relative clause head. In examples (26a-b), the matrix clause is affirmative, whereas the

relative clause is negative. The relative clause head *sihteerin paikkaa* ‘secretary position’ takes the affirmative particle *-kin* (a), whereas the negative particle *-kAAn* is ungrammatical (b).

- (26) a. *Pekka haki sitä sihteerin paikkaa-kin, jota Merja ei tarjonnut ___ hänelle.*
 Pekka applied that.PAR secretary position.PAR-*kin* which.PAR Merja not offered s/he.to
 ‘Pekka applied also for the secretary position that Merja didn’t offer him.’
- b. **Pekka haki sitä sihteerin paikkaa-kaan, jota Merja ei tarjonnut ___ hänelle.*
 Pekka applied that.PAR secretary position.PAR-*kAAn* which.PAR Merja not offered s/he.to

A possible strategy for explaining these facts away is to assume that the polarity properties are determined after movement of the relative clause head. However, \bar{A} -movement does not feed polarity morphosyntax in Finnish. Examples (27b-c) below shows that the *-kAAn*-particle reconstructs to the complement clause in long-distance \bar{A} -movement.

- (27) a. *Pekka arveli että Merja ei tarjoaisi hänelle sitä sihteerin paikkaa-kaan.*
 Pekka thought that Merja not offer.would s/he.to that.PAR secretary position.PAR-*kAAn*
 ‘Pekka thought that Merja wouldn’t offer him the position as a secretary either.’
- b. *Sitä sihteerin paikkaa-kaan Pekka arveli että Merja ei tarjoaisi ___ hänelle.*
 that.PAR secretary position.PAR-*kAAn* Pekka thought that Merja not offer.would s/he.to
 ‘Pekka thought that Merja wouldn’t offer him even the position as a secretary!’
- c. **Sitä sihteerin paikkaa-kin Pekka arveli että Merja ei tarjoaisi ___ hänelle.*
 that.PAR secretary position.PAR-*kin* Pekka thought that Merja not offer.would s/he.to

In conclusion, the distribution of the polarity particle *-kin* is generally preserved in \bar{A} -movement. However, when the *-kin*-particle is attached to the relative clause head, its properties do not reconstruct to the relativization site. This evidence from polarity therefore supports the head external analysis for relative clauses.

2.4 Anaphors and binding

Anaphor reconstruction effects provide perhaps the most compelling evidence in favor of the raising analysis (Kayne, 1994, 87). This section examines basic instances of anaphoric

relations in Finnish in terms of the Binding Theory (Chomsky, 1981, 1986) and demonstrates that anaphors do not reconstruct to the relativization site.

Finnish has two types of reflexive anaphors: the reflexive *itsensä* ‘him/herself’ (example (28a)), and the third person possessive suffix (example (28b)). Both the reflexive anaphor *itsensä* and the third person possessive suffix are Condition A anaphors in Finnish (for the syntax of possessive suffixes in Finnish, see Vainikka 1989, Trosterud 1993). For example, when the third person possessive suffix is attached to a noun head, as in (28b-c), it requires a local c-commanding antecedent.

- (28) a. *Pekka näki itsensä.*
 Pekka.NOM saw self.ACC
 ‘Pekka saw himself.’
- b. *Pekka näki valokuvansa.*
 Pekka.NOM saw picture.ACC.PX/3SG
 ‘Pekka saw his picture.’
- c. **Minä näin valokuvansa.*
 I.NOM saw picture.ACC.PX/3SG

We will now construct experiments where the reflexive anaphor has an appropriate antecedent only under the raising analysis, but not under the head external analysis. The raising analysis therefore predicts such expressions to be grammatical, while the head external analysis predicts the opposite. One relevant example is (29a), which shows that Finnish reflexive anaphor cannot be interpreted if the only suitable correlate is inside the relative clause. A possible way out is to hypothesize that movement feeds Condition A. There is however no evidence that Finnish \bar{A} -movement would have such properties; in example (29b), the reflexive anaphor can be bound by the antecedent *Pekka* that c-commands it locally prior to the long-distance \bar{A} -movement.⁷

- (29) a. **Minä ihailen itseään jota Pekka vihaa ____.*
 I.NOM admire.1SG self.PAR which.PAR Pekka.NOM hates
 ‘*I admire himself who Pekka hates.’
- b. *Itseään minä sanoin että Pekka vihaa ____!*
 self.PAR I.NOM said that Pekka.NOM hates
 ‘I said that Pekka hates HIMSELF!’

Because it is controversial whether a reflexive pronoun can function as a head of a restrictive relative clause, let us consider examples (30a-c) that further illustrate the same

⁷ The moved element receives contrastive focus in example (29b), which is indicated by capital letters in the English translation.

point. The reflexive does not reconstruct to the relative clause in (b), although the reconstruction is possible in \bar{A} -movement in (c).⁸

- (30) a. *Pekka_i palkkasi itseään_i fiksumpia ihmisiä.*
 Pekka.NOM hired self.PAR smarter.PAR people.PAR
 ‘Pekka hired people smarter than himself.’
- b. *Minä ihailen niitä itseään*_i fiksumpia ihmisiä, joita Pekka_i palkkasi ____.*
 I.NOM admire those.PAR self.PAR smarter.PAR people.PAR who.PAR
 Pekka.NOM hired
 ‘I admire those people smarter than himself who Pekka hired.’
- c. *[Itseään_i fiksumpia ihmisiä] Pekka_i palkkasi ____!*
 self.PAR smarter.PAR people.PAR Pekka.NOM hired
 ‘Pekka hired people smarter than himself!’

Another way to say the same is that \bar{A} -movement reconstructs for Condition A. It is therefore not clear how the raising analysis can account for the lack of co-reference in (29a) and in (30b). Manninen (2003b) acknowledges these facts but maintains the raising analysis. She speculates that the lack of reconstruction is due to an independent principle, but the proposal cannot be evaluated since the principle remains unknown.

Similar data is available for the third person possessive suffix. Reconstruction to the relativization site is not possible (31a), although the third person possessive suffix normally reconstructs for \bar{A} -movement in Finnish (b). Note that examples (31a-b) avoid the problem of relativizing a reflexive anaphor while still providing evidence from reflexive binding in relative clause constructions.

- (31) a. **Minä ihailen sitä uusinta maalaustaan_i, jota Pekka_i vihaa ____.*
 I.NOM admire that.PAR newest.PAR painting.PAR.PX/3SG which.PAR
 Pekka.NOM hates
 Intended: ‘I admire that newest painting of his_i, which Pekka_i hates.’
- b. *Uusinta maalaustaan_i Pekka_i vihaa ____.*
 newest.PAR painting.PAR.PX/3SG Pekka.NOM hates
 ‘Pekka hates his NEWEST PAINTING.’

Binding Conditions B and C further support the head external analysis. First, Binding Condition B states that a pronoun must be free in its local domain, as illustrated in (32a). Example (b) shows that co-reference remains to be impossible after \bar{A} -movement of the pronoun. Assuming that the relative clause head is base-generated to the relativization site, we would expect to observe the same reconstruction effect in example (33c): the

⁸ These sentences have the additional reading where the self-reflexive is interpreted as referring to the noun head, as in *a man smarter than himself*.

pronoun should fail to co-refer with the subject argument *Pekka*. However, the co-reference is possible. This means that the pronoun does not reconstruct to the relativization site.

- (32) a. *Pekka_i vihaa hänen_{*i/j} maalauksiaan.*
 Pekka hates his/her paintings
 ‘Pekka hates his/her paintings.’
- b. *Hänen_{*i/j} maalauksiaan Pekka_i vihaa ____.*
 his/her paintings Pekka hates
 ‘Pekka hates HIS PAINTINGS.’
- c. *Minä pidän ainoastaan siitä hänen_{i/j} maalauksestaan, jota Pekka_i vihaa ____.*
 I like only that his/her painting which Pekka hates
 ‘I like only that painting of his that Pekka hates.’

Binding Condition C states that a referential expression must be free; this is shown for Finnish in (33a), where a c-commanding pronoun fails to co-refer with the proper name *Pekka*. Example (b) shows that, similarly as with Condition B, Finnish \bar{A} -movement reconstructs for Binding Condition C. The reconstruction effects are nevertheless absent in the relative clause construction (c).

- (33) a. *Minä tiedän että hän_{*i/j} vihaa Pekan_i maalausta.*
 I know that s/he hates Pekka’s painting
 ‘I know that s/he hates Pekka’s painting.’
- b. *Pekan_i maalausta minä arvelin että hän_{*i/j} vihaa ____*
 Pekka’s painting I thought that s/he hates
 ‘I thought that s/he hates PEKKA’S PAINTING.’
- c. *Minä pidän ainoastaan siitä Pekan_i maalauksesta, jota hän_{i/j} vihaa ____.*
 I like only that Pekka’s painting that s/he hates
 ‘I like only that painting of Pekka that he hates.’

To summarise, assuming that raising is an instance of \bar{A} -movement, the raising analysis predicts that the anaphoric relations of the relative clause head should reconstruct to the relativization site. In this section, we have provided examples that suggest that none of the traditional binding conditions support the reconstruction hypothesis. First, we examined reflexive anaphors and showed that the raising analysis would violate binding condition A. We then proceeded to examine data from pronominal binding and demonstrated that both binding conditions B and C would be violated in the raising analysis. These violations do not arise in head external analysis, where the relative clause head is base-generated outside the relative clause.

However, there exists a subclass of reflexive anaphors that display exceptional behaviour with respect to Binding Condition A. We will address them briefly before proceeding to the next section. Consider examples (34a-b) below. In these examples, the relative

clause head forms a picture noun phrase, with a reflexive anaphor that is able to pick its referent from the relative clause. Reciprocals, such as *toisiaan* ‘each other’ in (c), form another type of anaphor that can receive an antecedent within the relative clause.

- (34) a. *kuva itsestään_i jonka Pekka_i maalasi* ____
 picture himself.of.PX/3SG which.ACC Pekka.NOM painted
 ‘a picture of himself which Pekka painted’
- b. *kuva pojastaan_i jonka Pekka_i maalasi* ____
 picture son.of.PX/3SG which.ACC Pekka.NOM painted
 ‘a picture of his son which Pekka painted’
- c. *tunteet toisiaan_i kohtaan, joita [Pekka ja Merja]_i osoittivat* ____
 feelings each.other towards which Pekka and Merja showed
 ‘feelings for each other which Pekka and Merja showed’

These type of anaphors have been used for supporting the raising analysis (e.g. Kayne, 1994, 87). However, it has been observed that picture noun phrases differ from other reflexives by finding their antecedents contextually (Pollard & Sag, 1992, Reinhart & Reuland, 1993). We will not address this special case in this paper, but merely note that picture noun phrases have exceptional referring capacities in Finnish relative clauses. It should be noted that neither Binding Condition B nor C reconstructs to the relativization site in these constructions. Example (35a) shows that a pronoun is able to refer to a proper name within the relative clause, although it would be ungrammatical in the relativization site (b), in accordance with Condition B. Similarly, Condition C is not violated in (36a), although the violation is present in (b).

- (35) a. *Tämä on se kuva hänestä_{i/j}, jota Pekka_i vihaa* ____.
 this is the picture him.of which Pekka hates
 ‘This is the picture of him which Pekka hates.’
- b. *Pekka_i vihaa kuvaa hänestä_{*i/j}.*
 Pekka hates picture him.of
 ‘Pekka hates the picture of him.’
- (36) a. *Tämä on se kuva Pekasta_i, jota hän_{i/j} vihaa* ____.
 this is the picture Pekka.of which s/he hates
 ‘This is the picture of Pekka which he hates.’
- b. **Hän_i vihaa kuvaa Pekasta_i.*
 s/he hates picture Pekka.of
 ‘*He_i hates the picture of Pekka_i.’

We therefore conclude that apart from picture noun phrases hosting reflexive anaphors, the binding data support the head external analysis.

2.5 Scope

Final syntactic phenomenon that displays reconstruction effects which we will examine in this paper concerns quantifier scope. The raising analysis can be supported with examples of quantifiers, where the narrow scope reading of the relative clause head is traced down to the relativization site (Åfarli, 1994, Bianchi, 2000). However, we failed to find this type of scope reconstruction effects from Finnish relative clauses.

To provide few illustrative examples, a sentence such as (37) has two possible readings, one where the existential quantifier lies within the scope of the universal quantifier ($\forall > \exists$) ‘for each person, there is some guru such that the person admires that guru’ and another where the scopes are reversed ($\exists > \forall$) ‘there is one guru such that everyone admires him/her’.

- (37) *Kaikki ihailevat jotain guraa.*
 everyone.NOM admire some.PAR guru.PAR
 ‘Everyone admires some guru.’

The same readings are present in sentences where the existential quantifier \bar{A} -moves:

- (38) *Jotain guraa kaikki ihailevat ____.*
 some.PAR guru.PAR everyone.NOM admire
 ‘Everyone admires some guru.’ ($\exists > \forall, \forall > \exists$)

If the existential quantifier is relativized, however, the narrow reading of the existential is off:⁹

- (39) a. *Joku guru, jota kaikki ihailevat ____, vierailee Ruotsissa.*
 some guru who.PAR everyone admire visits Sweden.in
 ‘Some guru, who everyone admires, visits Sweden.’ ($\exists > \forall, * \forall > \exists$)
 b. *Kolme guraa, joita kaikki ihailevat ____, vierailee Ruotsissa.*
 three guru.PAR who.PL.PAR everyone admire visits Sweden.in
 (The) three gurus, who everyone admires, will visit Sweden.’ ($\exists > \forall, * \forall > \exists$)

The existential quantifier is not, therefore, reconstructed for the purposes of scope interpretation. This is unexpected in the raising analysis: if the quantifier was base-generated to the relativization site, we would expect it to maintain its scope in \bar{A} -movement to the

⁹ It is possible to construct examples where the existential quantifier is contained within the relative clause head, thus avoiding the relativization of the quantifier expression itself:

- (i) a. *Kaikki noudattavat jonkun gurun opetuksia.*
 ‘Everyone follows the teachings of some guru.’ ($\exists > \forall, \forall > \exists$)
 b. *Jonkun gurun opetukset, joita kaikki noudattavat ____, ovat mielenkiintoisia.*
 ‘The teachings of some guru which everybody follows, are interesting.’ ($\exists > \forall, * \forall > \exists$)

edge of the relative clause. Comparison to \bar{A} -movement of the quantifier in example (38) reveals that the derivation of the relative clause does not share the properties of other types of \bar{A} -movement to the left periphery of a finite clause.

2.6 Transparent and opaque idioms

Another type of evidence for the raising analysis is provided by idioms. The relative clause head can constitute part of an idiom whose second part is made up of the verb inside the relative clause (*the headway we made*), as in Finnish examples (40a-b). Under the assumption that idiom constituents are necessarily merged together (Marantz, 1984), the head must have been inside the relative clause (Schachter, 1973, Vergnaud, 1974).

- (40) a. *Se väite, jonka Pekkakin allekirjoitti ____, on kumottu.*
 the.NOM claim.NOM which.ACC Pekka.too signed has.been rejected
 ‘The claim that Pekka agreed with as well, has been rejected.’
allekirjoittaa väite ‘agree with’, lit. ‘sign a claim’
- b. *?Vihaan läppää jota Pekka heittää ____.*
 hate.1SG joke.PAR which.PAR Pekka throws
 ‘I hate Pekka’s jokes.’
heittää läppää ‘talk nonsense, joke’ lit. ‘throw jokes’

In contrast, many idioms are opaque in the sense that they cannot be broken up in a relative construction (**the bucket he kicked*) (see de Vries, 2002, 78). Example (41) illustrates this phenomenon in Finnish:

- (41) a. **?Pelkäsin kenkää, jota pomo antaa meille ____, jos epäonnistumme.*
 was.afraid.1SG shoe.PAR which.PAR boss.NOM gives us if
 fail.1PL
antaa kenkää ‘fire’, lit. ‘give shoe’
 Intended: ‘I was afraid of the boss firing us if we fail.’
- b. **?henki, jota kala haukkoi joutuessaan kuivalle maalle*
 breath which.PAR fish.NOM gasped ended.up try land
haukkoa henkeä ‘catch one’s breath’, lit. ‘gasp breath’
 Intended: ‘the breath the fish was gasping when it ended up on dry land’

The evidence is therefore ambiguous at best and can support neither the raising analysis nor the head external analysis. Under the head external analysis, the differences between the idiom classes can nevertheless be accounted for by assuming that the idioms in (40) can, in fact, be merged to separate positions, whereas idioms in (41) are necessarily merged together. Evidence that this is so comes from the distribution of pre-nominal adjective modifiers: the former type of idioms allow such adjectives (42a-b), while the latter do not (c-d).

- (42) a. *Pekka allekirjoitti sen kiistanalaisen väitteen.*
 Pekka signed the/that.ACC controversial.ACC claim.ACC
 ‘Pekka signed the controversial claim.’
- b. *Pekka heitti kaubaaa läppää.*
 Pekka threw terrible.PAR joke.PAR
 ‘Pekka told terrible jokes.’
- c. **Pomo antoi meille pientä kenkää.*
 boss.NOM gave us small.PAR shoe.PAR
- d. **Kala haukkoi sääliittävää henkeään.*
 fish.NOM gasped pityful.PAR breath.PAR

Furthermore, the former type of idioms can be base-generated in separate positions in resumptive constructions. Examples (43a-b) illustrate resumptive prolepsis, where the constituent in the relative case is related to the complement clause via a pronominal expression. It is unlikely that this construction was derived via \bar{A} -movement in Finnish. For example, movement in example (43b) violates Left Branch Condition (Ross, 1967; for Finnish, see Huhmarniemi, 2012).

- (43) a. *Siitä läpistä Pekka sanoi että se oli hyvin heitetty.*
 that.of joke.of Pekka said that it was well thrown
 ‘Pekka said about that joke that it was a good one.’
- b. *Siitä väitteestä Pekka sanoi että [sen allekirjoittaminen] on hänelle helppoa.*
 that.of claim.of Pekka said that it.ACC signing.NOM is s/he.to easy.PAR
 ‘Pekka said about that claim that it is easy for him to agree with it.’

If we accept the hypothesis that certain idioms are decomposable, then the idiom data speaks in favor of head external analysis and against raising. But why does a contrast like (40-41) arise? We propose that the idioms in (40) receive literal interpretation while still maintaining something close to their idiomatic interpretation, while the idioms in (41) do not. Consider the idiom *antaa kenkää* ‘fire’, lit. ‘give shoe’. The meaning of ‘to fire somebody’ does not contain the meaning of ‘shoe’, although the word denoting shoe is there; but it is likely that the meaning of *allekirjoittaa väite* ‘agree with’, lit. ‘to sign a claim’ involves a literal claim and literal signing.

According to the head external analysis, the two parts of a “true idiom” are always merged together; hence an expression where the parts are separated in this way is automatically illicit. If and only if the parts are separable both syntactically and semantically, hence if and only if they do not behave like true idioms, can the “idiom chunk” be separated into two blocks.

However, there are several problems with this analysis. First one concerns snowball relativization discussed in section 2.2.4. Recall that the snowball relativization results in a structure where the head of the relative clause (e.g. *the contestant*) lies arbitrarily deeply embedded inside of a specifier's specifier of a head. Positioning movement out of this environment violates well-known constraints on movement. For example, extraction from a moved constituent violates the Condition on Extraction Domains (Huang, 1982; see also Salzman, 2006). This problem has been recognized among others by Bhatt (2002, 81) in connection with English possessors.

Moreover, it is possible to construct examples such as (48a), in which the DP is embedded within an adverbial clause that is an island in this context. Movement of the DP would therefore violate two island constraints: extraction from left branch and extraction from an adjunct (for extraction conditions in Finnish, see Toivonen, 1995, Huhmarniemi, 2009, 2012). Example (b) shows that extraction of a wh-phrase from this construction is impossible.

- (48) a. [*sen vanhan talon*] *alla*, [[[*jonka* ___] *naapurissa*] *asuessaan*] *Sirkku oli vielä lapsi*
 the old house under which neighbor.in living Sirkku was still child
 'under the old house whose neighboring house Sirkku was living in when she was still a child'
- b. **Minkä* *Sirkku oli vielä lapsi* [*asuessaan* [___ *naapurissa*]]?
 what.GEN Sirkku was still child living neighbor.in

The second problem concerns the fact that if relativization is allowed to contain overt determiners, an obtrusive set of assumptions is called for to prevent determiner doubling. It is of course possible to posit such mechanisms. However, they are not needed in the head external analysis. A related problem is to explain how such determiner phrase can still contain the relative pronoun, which, too, is assumed to occur at the D-position. Manninen proposes the following structure:

- (49) [*DP joka* [*DP se* [*NP kilpailija*]]]
 who the competitor

But, if this is possible, why cannot one normally stack determiners in Finnish? For example, a determiner pronoun cannot occur together with a demonstrative in (50a-b).

- (50) a. **tämä se auto*
 this the/that car
- b. **se tämä auto*
 the/that this car

In addition, the data from Finnish wh-questions fail to offer support for the determiner stacking hypothesis. Consider sentence (51a), where the possessor occupies the edge

of D.¹¹ Example (b) illustrates that a wh-phrase cannot occur together with an overt determiner or a demonstrative pronoun (Huhmarniemi, 2012, p. 147). In conclusion, determiner stacking in (49) would represent an exceptional phenomenon in Finnish.

- (51) a. *Kenen polkupyörä varastettiin?*
 whose bike.NOM stolen.PASS
 ‘Whose bike was stolen?’
 b. **Kenen se polkupyörä varastettiin?*
 whose the/that.NOM bike.NOM stolen.PASS

Finally, Manninen (2003b, 685) argues that extraposition poses a problem for the head external analysis on the basis that it is difficult to explain how the determiner and the noun head could strand their own complement. Assuming, following the view of Kayne and Manninen, that it is the D + N that moves, we believe that this way of stating the problem exaggerates it. If the relative clause is (right-)adjoined to the nominal projection instead of merging to the complement, it is less of a mystery how it can be stranded. In addition, it is possible that it is the relative clause that moves, not the nominal material (Fox & Nissenbaum, 1999).

2.8 Summary

We have compared the fates of two hypotheses concerning the syntactic structure of relative clauses in Finnish: the raising analysis and the head external analysis. We found no evidence of the head being merged inside the relative clause, while the evidence (that is not outright equivocal) speaks in favor of the head external analysis.¹² Therefore, we will develop a head external derivation for Finnish restrictive relative clauses.

¹¹ Finnish possessor can appear together with an overt determiner, as in (i.a), and in lower positions. For example, the possessor can be located below the numeral or below the adjective, as in examples (i.b-c), but determiner stacking remains to be ungrammatical (i.d).

- (i) a. *ne hänen autonsa*
 those his/her cars.PX/3SG
 ‘those cars of his/her’
 b. *ne kolme hänen autoaan*
 those three his/her car.PAR.PX/3SG
 ‘those three of his/her cars’
 c. *se punainen Pekan polkupyörä*
 the/that red Pekka.GEN bike
 ‘Pekka’s red bike’
 d. **tämä punainen se Pekan polkupyörä*
 this red the/that Pekka’s bike

¹² There is one argument in favor of the raising analysis raised by Manninen (2003b) but left unexplored in this paper – the fact that there appears to be a selection-type relation between certain determiners and the unit constituting the noun head and the relative clause. Specifically, certain D-elements can only select for the N + CP complex but not for an N (*The Paris that I love* vs. *I love (*the) Paris*). This phe-

3 An analysis of Finnish relativization

3.1 Introduction

In the previous section we provided evidence for the head external analysis of Finnish restrictive relative clauses, where the relative clause is merged inside the DP that contains the relative clause head. We recognize two possible sites where the relative clause can be merged: complement to the noun head or right-adjunct to some projection inside the DP. The complement-analysis has been defended by Platzack (2000), among others, while the adjunct-approach has been argued by Jackendoff (1977). In section 3.2, we consider these two hypotheses and propose that in Finnish, the relative clauses are right-adjoined to the hosting DP.

Once the structural properties of the hosting DP are settled, section 3.3 will move to examine the properties of relative pronoun movement, with a special emphasis on snowball wh-movement and the landing site of the relative pronoun at the left periphery of Finnish relative clause. Our theoretical assumptions come from minimalism (Chomsky, 2000, 2008). We will provide an analysis of movement in terms of the edge feature by Chomsky (2008), which has been applied earlier to Finnish wh-questions (Huhmarniemi & Brattico, 2013).

3.2 Relative clauses are right-adjoined

The most compelling evidence for the adjunction analysis of relative clauses is that a relative clause can appear in a noun phrase where the complement of the noun head is already occupied. For example, in (52a), the non-finite clause *ostaa auto* ‘to buy a car’ occupies the complement of N.¹³ In this example, the relative clause modifies the head noun *sopimus* ‘agreement’. Similarly, in examples (52b-c), the relative clause can modify a noun phrase which has its complement position filled. In (b), the complement position is filled with a non-finite clause, and in (c), a quantifying noun head takes a noun phrase as its complement.¹⁴

- (52) a. *Merja hylkäsi jokaisen sopimuksen ostaa auto, jota Pekka
Merja rejected each.ACC agreement.ACC to.buy car.NOM which.PAR Pekka
ehdotti ____.
suggested*

nomenon is also present in Finnish, as argued by Manninen (2003b, 678–679). This suggest that the N + CP complex is in reality something else, namely a CP with the nominal material in Spec,CP. Such data can be explained by assuming that the D selects for a CP. We will leave this question open in this paper.

¹³ The complement position is supported among others by extraction data (Huhmarniemi, 2012, 131–132). It is well-known that this non-finite clause occurs as the complement of a verb (Vainikka, 1989, Toivonen, 1995, Koskinen, 1998).

¹⁴ We thank an anonymous reviewer for pointing out the example (52c).

‘Merja rejected each agreement to buy a car which was suggested by Pekka.’

- b. *se Merjan lupaus auttaa Pekkaa jota hän ei pitänyt* ___
 the/that Merja’s promise to.help Pekka.PAR which.PAR s/he not kept
 ‘Merja’s promise to help Pekka which she didn’t keep’
- c. *se pullo mehua, jonka Pekka unohti jääkaappiin* ___
 the/that bottle juice.PAR which.ACC Pekka forgot fridge.to
 ‘the bottle of juice which Pekka forgot to the fridge’

Binding Condition C provides further evidence that relative clauses are adjuncts. In example (53a), the possessive pronoun at Spec,NP can be coreferential with the proper name inside the relative clause. If the relative clause were merged to the complement of N, then Spec,NP would c-command the proper name and Condition C would make coreference impossible. This observation can be contrasted with declarative CP-complements, such as (b), where the coreference between the pronoun and the proper name is impossible.

- (53) a. *se hänen_{i/j} autonsa, jonka Merja_i pesi*
 the/that.NOM his/her car.NOM.PX/3SG which.ACC Merja.NOM washed
eilen ___
 yesterday
 ‘the car of hers that Merja washed yesterday’
- b. *Merja ei hyväksynyt hänen_{*i/j} ajatustaan, että Pekka_i*
 Merja.NOM not accepted his/her idea.ACC.PX/3SG that Pekka.NOM
lähtisi.
 leave.would
 ‘Merja didn’t accept his/her idea that Pekka would leave.’

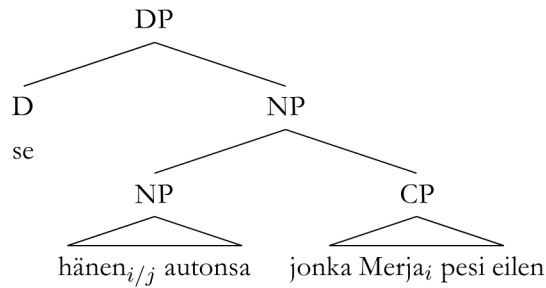
These facts suggest that Finnish relative clauses can be right-adjoined to the hosting DP.¹⁵ But to which position? The placing of possessors in Finnish noun phrases provides evidence of the adjunction site. Consider again the example (53a)/(54). Since the possessor can be coreferential with the proper name inside the relative clause, Condition C predicts

¹⁵ Finnish relative clauses are semantically close to participial adjectives, which in turn exhibit semantic and syntactic properties of adjuncts. For example, certain relative clauses can be transformed into participial clauses and vice versa. The strong resemblance to adjoined phrases makes it more likely that relative constructions are also adjoined. In (i.b) *Merjan ostama* ‘bought by Merja’ is a participial adjective adjoined to the NP.

- (i) a. *se auto [CP jonka Merja osti]*
 the/that car which Merja bought
 ‘the car which Merja bought’
- b. *se [AP Merjan ostama] auto*
 the/that Merja.GEN bought.PRTCPL car
 ‘the car bought by Merja’

that the possessor does not c-command the relative clause. The relative clause must therefore be able to occupy a higher position than the possessor. We conclude that relative clause can be right-adjoined above the possessive pronoun.

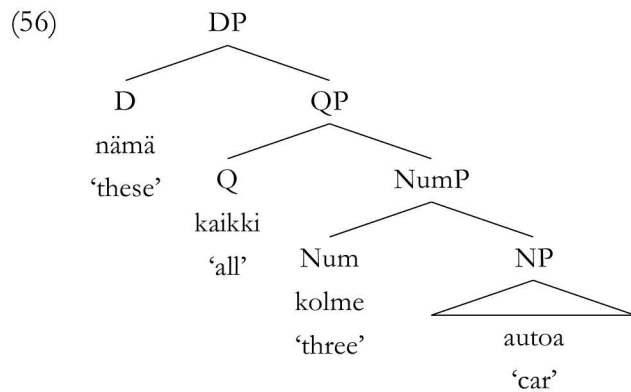
- (54) *se hänen_{i/j} autonsa, jonka Merja_i pesi eilen* —
 the/that his/her car which Merja washed yesterday
 ‘her car which Merja washed yesterday’



Finnish possessors typically occupy the specifier of NP (Vainikka, 1989, Brattico & Leinonen, 2009). The evidence above thus shows that the relative clause can be adjoined to the NP. However, possessors can also obtain higher positions within the DP, as in (55b-d).

- (55) a. *nämä kaikki kolme hänen autoaan*
 these.NOM all.NOM three his/her car.PAR.PX/3SG
 ‘all these three cars of his/hers’
 b. *nämä kaikki hänen kolme autoaan*
 c. *nämä hänen kaikki kolme autoaan*
 d. *?hänen nämä kaikki kolme autoaan*

We will assume the following cartography of Finnish DP (see for the functional projections inside Finnish noun phrases, Brattico, 2008, 2010, Brattico & Leinonen, 2009, Vainikka, 2011). Determiners and demonstrative pronouns occur at D, which can take a quantifier phrase as its complement. The projection NumP occurs between the quantifier phrase and the noun phrase:



If the possessive pronoun were always merged to Spec,NP, determiners, quantifiers and numerals should precede it. However, as can be seen in (55b-c), the possessor can occur between Q and Num or between D and Q, and even above D. Let us now investigate the Condition C with respect to the position of the possessive pronoun in examples (57a-c); in all cases, the co-reference between the pronoun and the proper name is available. If the relative clause were adjoined to the NP in (b-c), Condition C would forbid coreference. It is thus possible that the relative clause can be adjoined also to higher projections, such as QP or NumP in (b) or to the QP in (c) (Gröndahl, 2013).

- (57) a. *ne kaikki kolme hänen_{i/j} autoaan, jotka Merja_i*
 those.NOM all.NOM three his/her car.PAR.PX/3SG which.ACC Merja.NOM
pesi eilen
 washed yesterday
 ‘all those three cars of her’s which Merja washed yesterday’
 b. *ne kaikki hänen_{i/j} kolme autoaan jotka Merja_i pesi eilen*
 c. *ne hänen_{i/j} kaikki kolme autoaan, jotka Merja_i pesi eilen*

The argument is nevertheless weakened by the possibility of the pronoun obtaining any of these higher positions by \bar{A} -movement. The above argument then only holds if Condition C applies at the final position and does not see the first-Merge position (either by means of possessive reconstruction or by means of Condition C applying earlier than at LF). The following sentence shows, however, that Condition C does not bleed \bar{A} -movement.

- (58) *Häntäkö_{i/j} Pekka_i ajattelee, että sinä rakastat ___?*
 s/he.PAR.Q Pekka thinks that you love
 ‘Is it he/she who Pekka thinks that you love?’

Thus, if the pronoun obtains these higher positions by \bar{A} -movement, we cannot use Condition C effects for registering the position of the relative clause above the first-Merge position of the possessor. We leave the matter open for further study, as it is not crucial for the analysis we will propose in the next section.

In sum, we have argued that Finnish noun phrases offer several adjunction sites for the relative clause. The data from pronominal binding of the possessor suggest that the relative clause can be adjoined with a noun phrase (or occupy the complement position if it is available), and possibly with some of the higher projections.

3.3 On relativization

In this, final section, we discuss the internal mechanisms of relativization. In conclusion, we propose a theory of relativization in Finnish. We make the following initial assumptions. Relative clauses are derived by moving the relative pronoun, or a phrase containing the relative pronoun, from its first-Merge position to a left peripheral operator position of the

relative clause, where it encodes scope and participates in the presentation of clause type and/or labelling the clause. The gap left behind by the departure of the relative pronoun represents the *variable x* that is bound by a left peripheral operator OP, whose presence is in turn signalled by the relative pronoun movement itself:

- (59) *mies [jonka minä tapasin ___ eilen]*
 man who.OP_x I met x yesterday
 ‘a man, who I met yesterday’

We wish to investigate the following three questions: (1) what is moved, (2) what is the target of movement, and (3) how is this movement implemented.

We consider first question (2), the target of movement. It has been a long-standing proposition among specialists in the domain of Finnish syntax that finite clauses possess exactly one left peripheral position available for wh-elements, relative pronouns and other type of elements that get left peripheralised (Hakulinen & Karlsson, 1979, Vilkkuna, 1989, 1995, Vainikka, 1989, Vallduví & Vilkkuna, 1998, Holmberg & Nikanne, 2002, Kaiser, 2006). An example of each is shown in (60). Only one of these phrases can occupy the left peripheral position at the time.

- (60) a. *Kenet sinä tapasit ___?* (wh-movement)
 who.ACC you.NOM met
 ‘Who did you meet?’
- b. *mies, jonka sinä tapasit ___* (Relative pronoun movement)
 man who.ACC you.NOM met
 ‘a/the man you met’
- c. *Pekka sinä tapasit ___.* (Contrastive focus movement)
 Pekka.ACC.FOC you.NOM met
 ‘It was Pekka that you met.’
- d. *Pekka-ko sinä tapasit ___?* (Yes/no interrogativization)
 Pekka.ACC-Q you.NOM met
 ‘Was it Pekka that you met?’
- e. *Pekka-ban sinä tapasit ___.* (Discourse movement/*-hAn*)
 Pekka.ACC-*hAn* you.NOM met
 ‘It was Pekka that you met.’
- f. *Pekka-pa sinä tapasit ___.* (Discourse movement/*-pA*)
 Pekka.ACC-*pA* you.NOM met
 ‘It was Pekka that you met.’

The semantic function of these left peripheralised phrases is to represent operator-variable constructions and/or various discourse properties, such as contrastive focus.¹⁶

¹⁶ We will not go into details of the discourse functions of particles *-hAn* and *-pA* in this paper; for more information, see Hakulinen (1976), Nevis (1986), Hakulinen et al. (2004, §131).

Thus, we say that the left periphery represents scope-discourse features. We call them *peripheral features*, or P-features, after Chomsky (2000).

Discourse-related movement has been recently investigated for Finnish by Huhmarniemi (2012), Brattico et al. (submitted) and Huhmarniemi & Brattico (2013). One of the distinctive properties of relative clauses considers the distribution of P-features. We thus draw a distinction between the left peripheral *position* that may be occupied by at most one phrase, and the peripheral *features*, which are associated with that position and overtly expressed there. The distinction is important to make due to the fact that while only one full phrase can occur at the left peripheral position, that phrase may convey and/or overtly express several peripheral P-features. One way to think about this is that there is one left peripheral position which can host several P-features. For example, many of these features are available in ordinary interrogatives (61):¹⁷

- (61) a. *Sis KENET sinä tapasit ___?*
 So who.ACC.FOC you.NOM met
 ‘So who was it that you met?’
- b. *Kenet-hän hän tapasi ___?*
 who.ACC-*hAn* s/he.NOM met
 ‘I wonder who he met?’
- c. *Auton-ko-hän hän myi ___?*
 car.ACC-Q-*hAn* s/he.NOM sold
 ‘I wonder if it was a car that he sold?’
- d. *Kenet-kö-hän hän tapasi ___?*
 who.ACC-Q-*hAn* s/he.NOM met
 ‘Who do you think he met?’

However, interrogatives, contrastively focused elements and left peripheral clitics cannot occur at the left periphery of relative clauses, although they are available in other types of finite clauses. Thus, compare (61) and (62).

- (62) a. **mies, JONKA sinä tapasit ___*
 man who.ACC.FOC you.NOM met
- b. **mies, jonka-hän sinä tapasit ___*
 man who.ACC-*hAn* you.NOM met
- c. **mies, jonka-pa sinä tapasit ___*
 man who.ACC-*pA* you.NOM met
- d. **mies, jonka-ko sinä tapasit ___*
 man, who.ACC-Q you.NOM met

¹⁷ For the discourse-function of the particles in wh-questions, see Hakulinen et al. (2004, §1681).

The disparity between relative clauses and other finite clauses is further illuminated in the following. Finnish does not permit subject extraction from finite complement clauses, as shown in (63a) (Huhmarniemi, 2012, 97, fn. 54). However in spoken Finnish, the nominative wh-subject can be extracted if the moved element is focussed aggressively, as in (b).

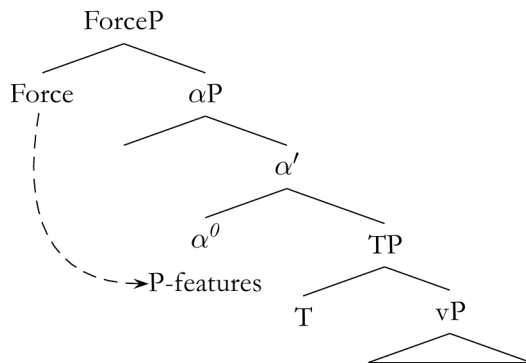
- (63) a. **?Pekka minä luulen että ___ siivoaa tämän sotkun.*
 Pekka.NOM I.NOM think that cleans this.ACC mess.ACC
 Intended: ‘Pekka I think will clean this mess.’
- b. *KUKA sä luulet että ___ siivoaa tämän sotkun?!*
 who.NOM you.NOM think that cleans this.ACC mess.ACC
 ‘Who (the hell) do you think that cleans this mess?’

Brattico (2012a) notes that such movement is impossible in relative clauses, such as (64). Since relative clauses do not license focus, aggressive focus movement is not available (cf. (62)).

- (64) **mies, joka sä luulet että ___ siivoaa tämän sotkun*
 man, who.NOM you.NOM think that cleans this.ACC mess.ACC
 Intended: ‘the man who (*the hell) you think will clean this mess’

What keeps P-features out of relative clauses? Following the cartography philosophy of Rizzi (2004) and the feature inheritance hypothesis of Chomsky (2008), Brattico et al. (submitted) argue that the difference lies in the fact that full finite clauses (other than relative clauses) are headed by projection Force, from which the left peripheral \bar{A} -position below *inherits* several P-features, which license additional discourse-elements (i.e. those in ex. (62)).¹⁸ The feature inheritance from Force to the lower \bar{A} -projection (α P) is illustrated below:

- (65) P-features are inherited from the Force-head.



¹⁸ A reviewer points out that there are differences with respect to which P-features are licensed in which finite clauses. Thus, whereas root finite clauses can realize each and every P-feature, embedded CPs are more limited. This is due to selection. Thus, an interrogative matrix verb can select for an interrogative CP (ForceP) and thus exclude certain P-features while allowing others.

However, relative clauses lack the Force-head, and therefore, they do not license these features or the elements carrying them. In other words, according to this analysis, many P-features originate in Force but reincarnate in a lower head, where they are involved in movement and P-feature checking. Thus, full finite clauses are analysed as in (66a), while relative clauses are more sparse: they lack the Force projection (66b). All \bar{A} -movement to the left periphery targets the Spec, α P, where α P represents a functional projection above TP but below Force (under Rizzi's system, α P = FocusP).

- (66) a. Finite clauses (other than relatives)
 ForceP - α P - TP - vP - VP
- b. Relative clauses
 α P - TP - vP - VP
 (Spec, α P = target of \bar{A} -movement)

As a first approximation, then, we propose that α^0 functions as a probe; it searches for a goal represented by the relative pronoun (or other types of variable elements) and the relative pronoun is moved to Spec, α P due to an EPP-feature located at α . If further features are inherited from Force, they function as probes. Relative clauses lack Force, however, and thus these extra P-feature probes are not available. The probe-goal system adopted here comes from Chomsky (2000, 2008). Example (67) shows how these mechanisms drive the derivation of the interrogative (63). The matrix clause is headed by Force, which contains the wh-feature together with an aggressive focus feature +FOC. These are peripheral P-features. These features are inherited by α^0 , which will probe a goal bearing the same features: an aggressively focused interrogative pronoun. Since α^0 possesses the EPP-feature, the pronoun will be sandwiched between Force and α^0 .

- (67) (*Force*⁰) *Kuka* (α^0) *sä luulet että* ___ *siivoaa tämän sotkun?*
 [FOC+wh] [FOC+wh] [+FOC+wh+EPP] you think that cleans this mess

An additional complication is that the moved element can be either a relative pronoun or a phrase that *contains* the relative pronoun. In the latter case, we say that the relative pronoun *pied-pipes* the phrase that wraps it. In the example (68), the moved DP *jota kohti* 'towards which' contains the relative pronoun.

- (68) *talo* [[*jota kohti*] *Pekka juoksi* ___
 house which towards Pekka ran
 'a/the house.towards which Pekka ran.'

However, as was discussed in section 2.2.4, Finnish relative clauses follow the edge generalization proposed by Heck (2008), according to which a relative pronoun has to occupy the edge of the pied-piped phrase. Thus, for example, the expression (69) is ungrammatical.

- (69) **talo* [[*kobti jota*] *Pekka juoksi* ____
 house towards which Pekka ran
 ‘a/the towards which Pekka ran.’

What if the relative pronoun is not initially situated at the left periphery of the pied-piped phrase? Huhmarniemi (2012) and Huhmarniemi & Brattico (2013) show that the edge generalization can be met by having the relative pronoun \bar{A} -move to the left periphery of its hosting phrase. Huhmarniemi & Brattico (2013) further show that such “intermediate secondary operations” satisfy all conditions which hold of the final movement step. In short, it is the same \bar{A} -movement which will bring relative pronouns to the left edge of their pied-piped phrases that will bring the whole phrase to the final scope position. The two movement steps are illustrated in (70a–b).

- (70) a. *Pekka juoksi kobti taloa.*
 Pekka ran towards house
 ‘Pekka ran towards a house.’
 b. *talo [jota₁ kobti ____₁]₂ Pekka juoksi ____₂*
 house which towards Pekka ran
 ‘a/the house towards which Pekka ran’

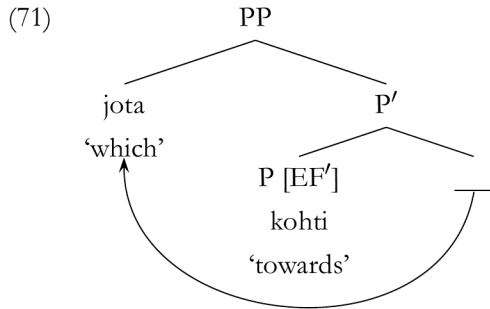
Because Huhmarniemi & Brattico (2013) failed to find an independent diagnostic property that would distinguish these two movement steps, they assumed that the mechanism (triggers and operations) are identical in both cases. Shall we assume, then, that there are P-features lurking all around the phrase-structure?

One possibility is that several types of phrases are headed by P-features, which in turn trigger the intermediate movement operations; another is that the triggering mechanism is a formal enterprise, while the scope-discourse interpretation arises as the moved elements are interpreted by the conceptual-intentional (C-I) component. Which one is the correct way? We see this primarily as a question of causes and effects: are peripheral interpretative shifts the constitutive cause, or the consequence, of movement? In other words, we take it for granted that there is (i) both successive-cyclic movement to the edge and (ii) interpretational effects tied with these operations; what has remained controversial is what causes what.

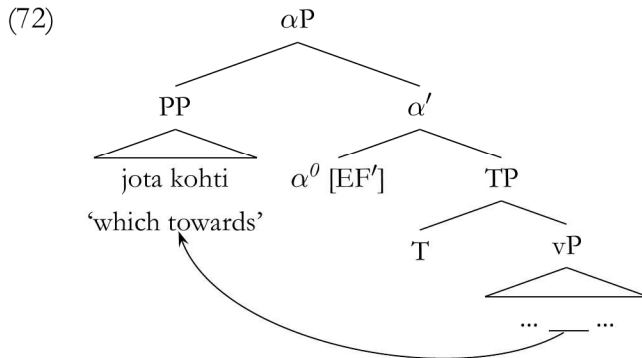
Chomsky (2000) assumed the former, while Chomsky (2008) assumes the latter. Huhmarniemi & Brattico (2013) follow the latter view and propose that movement is triggered by a left peripheral *edge feature* EF'. We will assume the same implementation of movement here. The left peripheral edge feature heading the phrase will make the extra Spec-positions available and fill it by internal Merge (i.e. phrasal movement) (see Chomsky 2008 for details).

To see this choreography in action, consider the derivation of the adposition phrase *jota kobti*. The preposition head possesses the edge feature EF' which acts as a probe for the relative pronoun. If a goal is found, it will be probed and moved to the left peripheral

position Spec,PP. Thus, the relative pronoun is moved to Spec,PP, resulting the order *jota kohti* in (71).



There will be no additional discourse interpretation: secondary relative pronoun movement in (71) is a formal operation (for a more generalized argument for a view which considers the EPP-feature as a formal quirk, see Brattico 2011b). Furthermore, also the matrix α possesses an EF' -feature that functions as a probe for the relative pronoun. It will locate the goal *jota* ‘which’ downstream, and the goal, or the phrase containing the goal, will be moved to Spec, α P, as in (72). However, the α -head of the relative clause cannot be purely formal: it must take some role in labelling the clause as a relative clause and establishing its scope properties.



Notice that the EF' -feature does not distinguish wh-pronouns, relative pronouns or phrases with discourse clitics from each other: they are probed in similar fashion, as shown by Huhmarniemi (2012). In effect, the edge feature of Chomsky (2008) is an abstract feature which makes the left peripheral Spec-position available and functions as a probe; the position is, furthermore, filled in an indiscriminate fashion. In Chomsky’s words, “the edge feature of the phase head is indiscriminate: it can seek any goal in its domain, with restrictions (e.g., about remnant movement, proper binding etc.) determined by other factors” (Chomsky, 2008, 151). The various goals are distinguished from each other only at the matrix level, where, as we have pointed out, features such as $[+wh]$ or the left peripheral discourse features reside in the Force head. Thus, “what is raised is identified as [e.g.] topic

by the final position it reaches, and any extra specification is redundant” (p. 151). It also follows that the goals will terminate movement only at these positions, since the intermediate EF'-triggered movement will not delete the P-features.

To summarize, goals are rolled up in a successive-cyclic fashion, one Spec-position at a time, until something lands at the final scope position. These operations have the consequence that sometimes the final scope position is filled with a relative pronoun, sometimes a phrase that *contains* a relative pronoun at its left periphery. The relative pronoun can be buried indefinitely deep inside the hosting phrase, depending on the number of layers involved in the movement operations. The same facts hold true of all forms of \bar{A} -movement in this language (with only minor differences here and there, not discussed in this article). Thus, the edge feature is indiscriminate.

The data in (73-74) illustrate these assumptions at work in a variety of Finnish constructions. Example (73) shows an outline of our analysis: the heads of various phrases (CP, AdvP and DP) possess an EF'-feature, which will trigger successive movement operations and pied-piping. Example (74) illustrates the same mechanism in a variety of constructions. Our stance is that the movement operations are not necessarily tied with a particular discourse interpretation, although in many cases they do trigger changes in the discourse interpretation.¹⁹

- (73) *kirjailija* [_{CP} [_{AdvP} [_{DP} *jonka* (D^0) ___ *kirjan*] (Adv^0) *luettuaan* ___] (α^0) *Pekka*
 writer whose +EF' book +EF' read.TUA +EF' Pekka
muutti mielipidettään ___.
 changed opinion
 ‘the writer after reading whose book Pekka changed his opinion’

- (74) a. [[*Kenen* ___ *kirjan*] *luettuaan* ___] *Pekka muutti mielipidettään* ___?
 whose book.ACC read.TUA Pekka changed opinion.his
 ‘After reading whose book did Pekka change his opinion?’
 b. [[*Merjan-ko* ___ *kirjan*] *luettuaan* ___] *Pekka muutti*
 Merja.GEN-Q book.ACC read.TUA Pekka changed
 mielipidettään ___?
 opinion.his
 ‘Was it after reading MERJA’S book that Pekka changed his opinion?’

¹⁹ One problem lingering in the air is which phrases are headed by the left peripheral edge feature EF'. Chomsky assumes that only *phase heads* have such properties. Huhmarniemi (2012) and Brattico (2012c) have studied the question in some considerable detail in Finnish, showing that there are many such phrases besides the standard phases CP, v*P (and DP). We can adopt a position according to which there are (in Finnish at least) many more phases than CP, v*P and DP, or find another, independent property which puts pied-piping domains aside from the rest. Brattico (2012c) adopts the latter option, but we will leave the question open here.

- c. [[*Merjan-ban* ___ *kirjan*] *luettuaan* ___] *Pekka muutti*
 mielipidettään ___.
 Merja.GEN-*hAn* book.ACC read.TUA Pekka changed
 opinion.his
 ‘It was after reading MERJA’S book that Pekka changed his opinion.’
- d. [[*Merjan-pa* ___ *kirjan*] *luettuaan* ___] *Pekka muutti*
 Merja.GEN-*pA* book.ACC read.TUA Pekka changed
 mielipidettään ___!
 opinion.his
 ‘It was after reading MERJA’S book that Pekka changed his opinion!’
- e. [[*MERJAN* ___ *kirjan*] *luettuaan* ___] *Pekka muutti mielipidettään* ___!
 Merja.GEN book.ACC read.TUA Pekka changed opinion.his
 ‘It was after reading MERJA’S book that Pekka changed his opinion!’

A final piece in this puzzle concerns the nature of the head α , which is in main clauses sandwiched between Force and T. Since Force encodes sentential force and tense represents tense, the semantic role left for α in finite clauses is to host operators representing scope. Thus, we think that α is best thought of as a head creating a pure operator-variable construction without the extra weight of P-features descending from Force. In addition, when it occurs without the Force-head, it has a role in labelling the clause as a relative clause.

4 Conclusions

This paper has addressed the structure and derivation of Finnish restrictive relative clauses. The first part of the paper comprised an investigation of Finnish relative clauses with relation to two persisting analyses of relative clauses: the raising analysis and the head external analysis. It was demonstrated that the data from the derivation of Finnish restrictive relative clauses headed by relative pronouns support the head external analysis against any of the raising analyses proposed to date.

In the second part of the paper, we proposed an analysis in which relative clauses are right-adjoined to a noun phrase. In addition, we proposed a system of the movement of the relative pronoun which amalgamates the properties of relative clauses to the properties of other finite clauses that exhibit \bar{A} -movement to the left periphery. First, it was proposed that the left periphery of Finnish relative clauses lack certain discourse features that are present in main clauses, and therefore, the relative clauses have a reduced set of left peripheral functional projections. In the model developed here, relative clauses are otherwise identical to main clauses, but they are missing the projection Force, which hosts the left peripheral discourse properties. Second, the movement of the relative pronoun was analyzed in terms of a general property at edge of different types phrases, the edge feature.

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